

IN THE CLAIMS:

Please amend the claims as shown below:

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1. (Currently Amended) A wavelength tunable laser comprising
a laser diode, and
a wavelength selective external cavity optically coupled to the laser diode, the
external cavity including a resonator having a tunable resonance wavelength and formed from
electro-optic material, first and second waveguides optically coupled to the resonator, and a
reflector optically coupled to the second waveguide.
2. (Currently Amended) The tunable laser of claim 1 ~~wherein the first and second
waveguides are vertically coupled to the resonator~~ further comprising a separation layer
interposing the first and second waveguides and a core layer of the resonator wherein the
separation layer vertically couples the first and second waveguides to the resonator.
3. (Original) The tunable laser of claim 2 wherein the first and second waveguides
and the resonator are formed on a single substrate comprising a plurality of layers.
4. (Currently Amended) The tunable laser of claim 3 wherein the plurality of layers
includes a the separation layer interposing the first and second waveguides and a the core layer
of the resonator.
5. (Original) The tunable laser of claim 4 wherein the first of second waveguides are
formed in the same layer.

6. (Original) The tunable laser of claim 4 wherein the first and second waveguides are formed in different layers.

7. (Currently Amended) The tunable laser of claim 1 wherein ~~the first and second waveguides are horizontally coupled to the resonator~~ coupling gaps interpose the resonator and the first and second waveguides and the coupling gaps horizontally couple the first and second waveguides to the resonator.

8. (Original) The tunable laser of claim 5 wherein coupling gaps interpose the resonator and the first and second waveguides.

9. (Original) The tunable laser of claim 1 wherein the resonator comprises a plurality of resonators.

10. (Original) The tunable laser of claim 1 further comprising a coupling lens interposing an end facet of the laser diode and an end facet of the first waveguide.

11. (Original) The tunable laser of claim 1 wherein the laser diode is butt-joint coupled to the first waveguide.

12. (Original) The tunable laser of claim 1 wherein the laser diode and external cavity are formed on a single substrate.

13. (Original) The tunable laser of claim 1 wherein the reflector comprises a mirror positioned adjacent an end facet of the second waveguide.

14. (Original) The tunable laser of claim 13 further comprising a collimated lens interposing the mirror and second waveguide.

15. (Original) The tunable laser of claim 1 wherein the reflector comprises a reflection coating applied to an end facet of the second waveguide.

16. (Original) The tunable laser of claim 12 further comprising an electro-absorption modulator formed on the substrate with the laser diode and external cavity and positioned adjacent an output end facet of the laser diode.

17. (Original) The tunable laser of claim 16 further comprising an external gain section formed adjacent the electro-absorption modulator.

18. (Original) The tunable laser of claim 1 wherein at least one of the first and second waveguides includes an amplifier.

19. (Original) The tunable laser of claim 1 wherein the laser diode comprises a multi-layer semiconductor wafer structure including first and second end facets.

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20. (Original) The tunable laser of claim 19 wherein one of the first and second end facets is coated with an anti-reflection coating

21. (New) The tunable laser of claim 1 further comprising first and second electrodes formed on opposite sides of the resonator.

22. (New) The tunable laser of claim 1 wherein each of the first and second waveguides has two ends that are thicker than a central portion thereof.

23. (New) A wavelength tunable laser comprising
a laser diode; and
a wavelength selective external cavity optically coupled to the laser diode, the external cavity including a resonator formed from electro-optic material, first and second electrodes formed on opposite sides of the resonator, first and second waveguides optically coupled to the resonator, and a reflector optically coupled to the second waveguide.

24. (New) The tunable laser of claim 23 wherein coupling gaps interpose the resonator and the first and second waveguides.

25. (New) The tunable laser of claim 23 further comprising a separation layer interposing the first and second waveguides.

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26. (New) The tunable laser of claim 23 wherein the first and second waveguides and the resonator are formed on a single substrate comprising a plurality of layers.

27. (New) The tunable laser of claim 26 wherein the first and second waveguides are formed in the same layer.

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28. (New) The tunable laser of claim 26 wherein the first and second waveguides are formed in different layers.

29. (New) The tunable laser of claim 23 wherein each of the first and second waveguides has two ends that are thicker than a central portion thereof.
